

What is claimed is:

1. A honeycomb filter, comprising:
an array of interconnecting porous walls which define an array of first channels and second channels, the first channels being bordered on their sides by the second channels and having a larger hydraulic diameter than the second channels, the first channels having a square cross-section, with corners of the first channels having a shape such that the thickness of the porous walls adjoining corners of the first channels is comparable to the thickness of the porous walls adjoining edges of the first and the second channels.
2. The honeycomb filter of claim 1, wherein the shape includes a fillet.
3. The honeycomb filter of claim 1, wherein the shape includes a bevel.
4. The honeycomb filter of claim 1, wherein edges of diagonally-adjacent first channels are substantially aligned.
5. The honeycomb filter of claim 1, wherein the second channels have a square cross-section.
6. The honeycomb filter of claim 5, wherein a ratio of the hydraulic diameter of the first channels to the hydraulic diameter of the second channels is in a range from 1.1 to 2.0.
7. The honeycomb filter of claim 6, wherein a ratio of the hydraulic diameter of the first channels to the hydraulic diameter of the second channels is in a range from 1.7 to 2.0.
8. The honeycomb filter of claim 1, wherein the first channels are end-plugged at a first end of the honeycomb filter and the second channels are end-plugged at a second end of the honeycomb filter so that flow into the first channels pass through the porous walls and then out of the honeycomb filter through the second channels.

9. A honeycomb filter, comprising:
an array of interconnecting porous walls which define an array of first channels having a square cross-section and second channels having a square cross-section, the first channels bordered on their edges by the second channels, the edges of the first channels being aligned with edges of the bordering second channels, the first channels having a larger hydraulic diameter than the second channels.
10. The honeycomb filter of claim 9, wherein the first channels are positioned relative to the second channels such that the porous walls have a substantially uniform thickness.
11. The honeycomb filter of claim 9, wherein corners of the first channels include fillets.
12. The honeycomb filter of claim 9, wherein corners of the first channels include bevels.
13. The honeycomb filter of claim 9, wherein a ratio of the hydraulic diameter of the first channels to the hydraulic diameter of the second channels is in a range from 1.1 to 2.0.
14. The honeycomb filter of claim 13, wherein a ratio of the hydraulic diameter of the first channels to the hydraulic diameter of the second channels is in a range from 1.7 to 2.0.
15. The honeycomb filter of claim 9, wherein the first channels are end-plugged at a first end of the honeycomb filter and the second channels are end-plugged at a second end of the honeycomb filter so that flow into the first channels pass through the porous walls and then out of the honeycomb filter through the second channels.

16. An extrusion die assembly for making a honeycomb filter, comprising:
a cell forming die having a central region and a peripheral region, the central region comprising an array of discharge slots cut to define an array of first and second pins and an array of first feedholes in communication with the array of discharge slots, the peripheral region comprising at least a second feedhole, the first pins having a larger cross-sectional area than the second pins, a cross-sectional shape of the first pins selected such that the width of the discharge slots is substantially uniform; and
a skin forming mask mounted coaxially with the cell forming die and radially spaced from the cell forming die so as to define a skin slot that is in selective communication with the at least second feedhole.
17. The extrusion die assembly of claim 16, wherein the cross-sectional shape of the first pins includes a square having filleted corners.
18. The extrusion die assembly of claim 16, wherein the cross-sectional shape of the first pins includes a square having beveled corners.
19. The extrusion die assembly of claim 16, further comprising a reservoir defined between the cell forming die and the skin forming mask, the reservoir being in communication with the at least second feedhole and the skin slot.
20. The extrusion die assembly of claim 16, wherein a volume of the outer skin reservoir is adjustable to control rate of flow of batch material to the skin slot.